Claim Amendments

Claims 1-4 (cancelled)

5. (currently amended) The method of claim 32[[1]], wherein the measuring and determining steps are carried repeatedly for providing changes in the location of the object as a function of time.

6. (cancelled)

7. (previously presented) The method of claim 32[[1]], wherein the designated interaction area has an upper side and a lower side, and said group of optical sensor components is placed on either the upper side or the lower side.

8. (currently amended) The method of claim 32[[1]], wherein the designated interaction area has a left side and a right side, and said group of optical sensor components is placed on either the left side or the right side.

9. (currently amended) The method of claim 32[[1]], wherein the first and second light emitters are operated in a pulsed mode of a predetermined frequency so that the changes in the first amount of light and the second amount of light contain a frequency component of the predetermined frequency.

10. (previously presented) A method of sensing and detecting the presence of an object at a touch pad device having one or more input functions, wherein the touch pad device has a designated interaction area for allowing a user to use the object to interact with the touch pad device for performing said one or more input functions, said method comprising the steps of:

providing at least one group of optical sensor components including a first light emitter, a second light emitter and a light receiver in the touch pad device at different locations thereof such that the receiver is capable of receiving a first amount of light emitted by the first light emitter and a second amount of light emitted by the second light emitter; wherein when the object is present at the touch pad device, causing a change in the first amount of light and the second amount of light,

measuring separately the change in the first amount of light and the change in the second amount of light for providing a first signal and a second signal indicative of the respective changes; and

determining the location of the object in the designated interaction area in relation to the first light emitter and the second light emitter based on the first and second signals, wherein the first and second light emitters are operated in a pulsed mode of a predetermined frequency so that the changes in the first amount of light and the second amount of light contain a frequency component of the predetermined frequency, and wherein the pulsed mode of the first and second light emitters are operated in a pulsed mode of a predetermined frequency with a first phase and said group of optical sensor components further includes a third light emitter positioned adjacent to the light emitter to provide a third amount of light to the light receiver, and wherein the third light emitter is operated in said pulsed mode with a second phase complementary of the first phase and the third light emitter is controlled such that the third amount of light is substantially equal to a sum of the first amount and the second amount when the object is not present at the touch pad device so as to reduce a frequency component in the sum of the first, second and third amounts.

11. (currently amended) The method of claim 32[[1]], wherein the touch pad device further includes a further group of optical sensor components including a third light emitter, a fourth light emitter and a further light receiver in the touch pad device at different locations thereof separating said first and second light emitters and the light receiver such that the further receiver is capable of receiving a third amount of light emitted by the third light emitter and a fourth amount of light emitted by the fourth light emitter; wherein when the object is present at the touch pad device, causing a change in the third amount of light and the fourth amount of light said method further comprising the steps of:

measuring separately the change in the third amount of light and the change in the fourth amount of light for providing a third signal and a fourth signal indicative of the respective changes; and

determining the location of the object in the designated interaction area in relation to the third light emitter and the fourth light emitter based on the third and fourth signals.

12. (original) The method of claim 11, wherein the designated interaction area has an upper side and a lower side, and wherein said group of optical sensor components is placed at the upper side and said further group of optical sensor components is placed at the lower side.

13. (original) The method of claim 11, wherein the designated interaction area has a left side and a right side, and wherein said group of optical sensor components is placed at the left side and said further group of optical sensor components is placed at the right side.

14. (original) The method of claim 11, wherein the first, second, third and fourth light emitters are operated in a pulsed mode of a predetermined frequency so that the changes in the first amount, the second amount, the third amount and the fourth amount of light contain a frequency component of the predetermined frequency.

15. (previously presented) A method of sensing and detecting the presence of an object at a touch pad device having one or more input functions, wherein the touch pad device has a designated interaction area for allowing a user to use the object to interact with the touch pad device for performing said one or more input functions, said method comprising the steps of:

providing at least one group of optical sensor components including a first light emitter, a second light emitter and a light receiver in the touch pad device at different locations thereof such that the receiver is capable of receiving a first amount of light emitted by the first light emitter and a second amount of light emitted by the second light emitter; wherein when the object is present at the touch pad device, causing a change in the first amount of light and the second amount of light,

measuring separately the change in the first amount of light and the change in the second amount of light for providing a first signal and a second signal indicative of the respective changes; and

determining the location of the object in the designated interaction area in relation to the first light emitter and the second light emitter based on the first and second signals, wherein the touch pad device further includes a further group of optical sensor components including a third light emitter, a fourth light emitter and a further light receiver in the touch pad device at different locations thereof separating said first and second light emitters and the light receiver such that the further receiver is capable of receiving a third amount of light emitted by the third light emitter and

a fourth amount of light emitted by the fourth light emitter; wherein when the object is present at the touch pad device, causing a change in the third amount of light and the fourth amount of light said method further comprising the steps of:

measuring separately the change in the third amount of light and the change in the fourth amount of light for providing a third signal and a fourth signal indicative of the respective changes; and

determining the location of the object in the designated interaction area in relation to the third light emitter and the fourth light emitter based on the third and fourth signals, wherein the first, second, third and fourth light emitters are operated in a pulsed mode of a predetermined frequency so that the changes in the first amount, the second amount, the third amount and the fourth amount of light contain a frequency component of the predetermined frequency, and wherein the pulsed mode of the first, the second, the third and the fourth light emitters has a first phase, and wherein said group of optical sensor components further includes a first compensation light emitter positioned adjacent to the light receiver to provide a first compensation amount of light to the light receiver, and said further group of optical sensor components further includes a second compensation light emitter positioned adjacent to the further light receiver to provide a second compensation amount to the further light receiver, and the first and second compensation light emitters are operated in a further pulsed mode of the predetermined frequency having a second phase complementary of the first phase and the first and the second compensation light emitters are controlled such that the first compensation amount of light is substantially equal to a sum of the first amount and the second amount, and the second compensation amount of light is substantially equal to a sum of the third amount and the fourth amount when the object is not present at the touch pad device.

16. (original) The method of claim 11, wherein the measuring steps regarding the first amount, second amount, third amount and fourth amount of light and the determining steps based on the first signal, the second signal, the third signal and the fourth signal are carried out repeatedly for providing changes in the location of the object as a function of time.

17. (canceled)

18. (currently amended) The touch pad device of claim 33[[17]], wherein the first and second light emitters are operated in a pulsed mode of a predetermined frequency so that the changes in the first amount of light and the second amount of light contain a frequency component of the predetermined frequency.

19. (currently amended) The touch pad device of claim 33[[17]], wherein the light emitters are light-emitting diodes.

20. (currently amended) The touch pad device of claim 33[[17]], wherein the light emitters are operated in an infrared frequency range.

21. (currently amended) The touch pad device of claim 33[[17]], wherein the designated interaction area has an upper side and a lower side and the first light emitter, the second light emitter and the light receiver are provided at the upper side, said touch pad device further comprising:

a further light receiver provided at the lower side;

a third light emitter provided at a third location adjacent the light receiver; and

a fourth light emitter provided at a fourth location adjacent the light receiver different from the third location such that the further light receiver is capable of receiving a third amount of light emitted by the third light emitter and a fourth amount of light emitted by the fourth light emitter, wherein when the object is present at the touch pad device, causes a change in the third amount of light and the fourth of light, the change in the third amount of light and the change in the fourth amount of light being separately measured by the measurement device for further determining the location of the object in the designated interaction area in relation to the third light emitter and the fourth light emitter.

22. (currently amended) The touch pad device of claim 33[[17]], wherein the designated interaction area has a left side and a right side and the first light emitter, the second light emitter and the light receiver are provided at the left side, said touch pad device further comprising:

a further light receiver provided at the right side;

a third light emitter provided at a third location adjacent the light receiver; and

a fourth light emitter provided at a fourth location adjacent the light receiver different from the third location such that the further light receiver is capable of receiving a third amount of light emitted by the third light emitter and a fourth amount of light emitted by the fourth light emitter, wherein when the object is present at the touch pad device, causes a change in the third amount of light and the fourth of light, the change in the third amount of light and the change in the fourth amount of light being separately measured by the measurement device for further determining the location of the object in the designated interaction area in relation to the third light emitter and the fourth light emitter.

23. (previously presented) A touch pad device to be used in conjunction with a measurement device, the touch pad device having a designated interaction area for sensing and detecting the presence of an object at the designated interaction area, said touch pad device comprising:

a light receiver provided in or near the designated interaction area, and

a first light emitter and a second light emitter provided respectively at a first location and a second different location in the designated interaction area such that the light receiver is capable of receiving a first amount of light emitted by the first light emitter and a second amount of light emitted by the second light emitter, wherein when the object is present at the touch pad device, causes a change in the first amount of light and the second amount of light, the change in the first amount of light and the change in the second amount of light being separately measured for determining the location of the object in the designated interaction area in relation to the first light emitter and the second light emitter, and wherein the designated interaction area has an upper right corner, an upper left corner, a lower right corner and a lower left corner, and

the first light emitter is provided at the upper right corner;

the second light emitter is provided at the upper left corner; and

the light receiver are positioned between the first and second light emitters, said touch pad device further comprising:

a third light emitter provided at the lower right corner;

a fourth light emitter provided at the lower left corner;

a second light receiver positioned between the third and fourth light emitters, and wherein the second light receiver is capable of receiving a third amount of light emitted by the third light emitter and a fourth amount of light emitted by the fourth light emitter for further determining the

location of the object in the designated interaction area in relation to the third light emitter and the fourth light emitter based separately on a change in the third amount and the fourth amount, wherein the first, second, third and fourth light emitters are bi-wavelength emitters emitting light at a first wavelength and a second wavelength, and the light receiver and the second light receiver are receivers operated at the first wavelength;

a third light receiver operated at the second wavelength and positioned between the first and third light emitters, wherein the third light receiver is capable of receiving a fifth amount of light emitted by the first light emitter in the second wavelength and a sixth amount of light emitted by the third light emitter in the second wavelength for further determining the location of the object in the designated interaction area in relation to the first light emitter and the third light emitter based separately on a change in the fifth amount and a change in the sixth amount; and

a fourth light receiver operated at the second wavelength and positioned between the second and fourth light emitters, wherein the fourth light receiver is capable of receiving a seventh amount of light emitted by the second light emitter in the second wavelength and an eighth amount of light emitted by the fourth light emitter in the second wavelength for further determining the location of the object in the designated interaction area in relation to the second light emitter and the fourth emitter based separately on a change in the seventh amount and a change in the eighth amount.

24. (canceled)

25. (currently amended) The system of claim 34[[24]], wherein the measurement module comprises a timing control module for disabling the first light emitter when the change in the second light amount is measured and disabling the second light emitter when the change in the first light amount is measured.

26. (currently amended) The system of claim 34[[24]], wherein the first light emitter and the second light emitter are operated in a pulsed mode of a predetermined frequency so that the changes in the first amount and the second amount contain a frequency component of the predetermined frequency, and wherein the measurement module further comprises a filtering module for providing the frequency component.

27. (currently amended) The method of claim 32[[1]], wherein the touch pad device has a display screen disposed in the inner area for showing said one or more input functions.

28 (currently amended) The touch pad device of claim 33[[17]], wherein the inner area has a display screen for showing said one or more functions.

29. (previously presented) The touch pad device of claim 28, wherein the display screen comprises an LCD.

Claims 30 and 31 (cancelled).

32. (currently amended) A method of sensing and detecting the presence of an object at a touch pad device having one or more input functions, wherein the touch pad device has a designated interaction area for allowing a user to use the object to interact with the touch pad device for activating said one or more input functions depending on a location of the object, the designated interaction area having a periphery, and wherein the touch pad device has a surrounding area substantially surrounding the periphery of the designated interaction area, said method comprising the steps of:

providing in the surrounding area at least one group of optical sensor components including a first light emitter, a second light emitter and a light receiver in the touch pad device at different locations thereof such that the receiver is capable of receiving a first amount of light emitted by the first light emitter and reflected by the object and a second amount of light emitted by the second light emitter and reflected by the object; wherein when the object is present at the touch pad device, causing a change in the first amount of light and the second amount of light,

measuring separately the change in the first amount of light and the change in the second amount of light for providing a first signal and a second signal indicative of the respective changes; and

determining the location of the object in the designated interaction area in relation to the first light emitter and the second light emitter by comparing the change in the first amount of light and the change in the second amount of light based on the first and second signals ~~The method of claim~~

~~1~~, wherein the change in the first amount of light and the second amount of light is an increased amount when the object is present at the touch pad device.

33. (currently amended) A touch pad device to be used in conjunction with a measurement device, wherein the touch pad device has a designated interaction area for allowing a user to use an object to interact with the designated interaction area in order to activate one or more functions associated with the touch pad device dependent on a location of the object, the designated interaction area having a periphery wherein the touch pad device also has a surrounding area substantially surrounding the periphery of the designated interaction area, said touch pad device comprising:

a light receiver provided in the surrounding area, and

a first light emitter and a second light emitter provided respectively at a first location and a second different location in the surrounding area in relationship to the light receiver such that the light receiver is capable of receiving a first amount of light emitted by the first light emitter and reflected by the object, and a second amount of light emitted by the second light emitter and reflected by the object, wherein when the object is present at the touch pad device, it causes a change in the first amount of light and the second amount of light, and wherein the change in the first amount of light and the change in the second amount of light are separately measured by the measurement device and these measured changes are compared for determining the location of the object in the designated interaction area in relation to the first light emitter and the second light emitter ~~The touch pad device of claim 17~~, wherein the change in the first amount of light and the second amount of light is an increased amount when the object is present at the touch pad device.

34. (currently amended) A system for sensing and detecting the presence of an object at a touch pad device, wherein the touch pad device has a designated interaction area for allowing a user to use the object to interact with the touch pad device in order to activate one or more functions associated with the touch pad device, the designated area having a periphery, and wherein the touch pad device also has a surrounding area substantially surrounding the periphery of the designated interaction area, said system comprising:

at least one group of optical sensor components including a first light emitter, a second light emitter and a light receiver in the surrounding area at different locations thereof such that the light receiver is capable of receiving a first amount of light emitted by the first light emitter and reflected

by the object, and a second amount of light emitted by the second light emitter and reflected by the object, wherein the first amount of light and the second amount of light are caused to change when the object is present at the touch pad device;

a measurement module, operatively connected to the light receiver, for separately measuring the change in the first amount of light and the change in the second amount of light for providing a first signal and a second signal indicative of the respective changes; so as to determine the location of the object in the designated interaction area in relation to the first light emitter and the second light emitter by comparing the first and second signals ~~The system of claim 24~~, wherein the change in the first amount of light and the second amount of light is an increased amount when the object is present at the touch pad device.